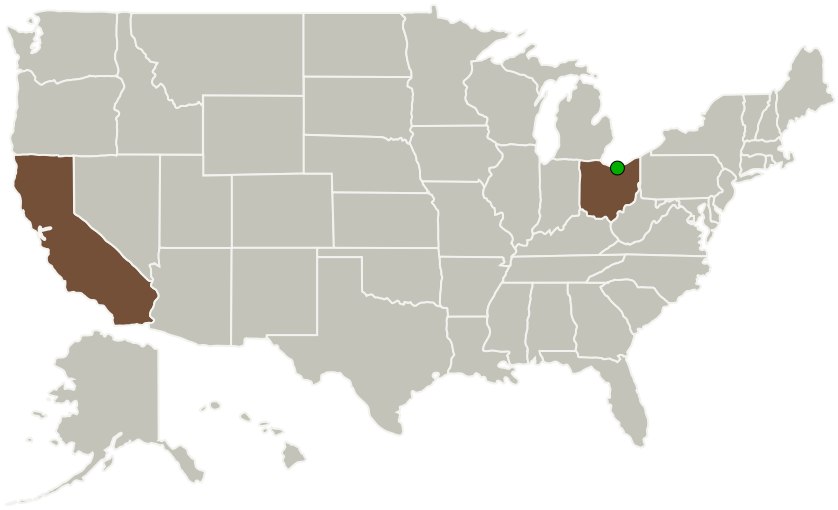
Affordable Maximum Performance Solar Array System with IMM PV for NASA Space Science & Exploration Missions, Phase I

Completed Technology Project (2012 - 2012)

Project Introduction

Deployable Space Systems, Inc. (DSS) will focus the proposed NASA Phase 1 program on the development and validation of ROSA-Max, a significantly structurally/electrically optimized version of the basic ROSA solar array technology with advanced ultra-lightweight structures and IMM photovoltaics. The combined embodiment with advanced ultra-lightweight structures and IMM photovoltaics offers maximum performance in all key metrics and unparalleled affordability for NASA Space Science missions. ROSA-Max will enable emerging Solar Electric Propulsion (SEP) Space Science missions through its ultra-lightweight, ultra-compact stowage volume, ultra-affordability, high strength/stiffness, and its high voltage and high/low temperature & illumination operation capability within many environments. The ROSA-Max technology will provide NASA/industry a near-term and low-risk solar array system that provides revolutionary performance in terms of high specific power (>300-500 W/kg BOL at the wing level, PV-blanket dependent), affordability (>50% projected cost savings at the array level, PV-blanket dependent), ultra-lightweight, high deployed stiffness (10X better than current rigid panel arrays), high deployed strength (10X better than current rigid panel arrays), compact stowage volume (>60-80 kW/m3 BOL, 10X times better than current rigid panel arrays), high deployment reliability and operation reliability, high radiation tolerance, high voltage operation capability (>200 VDC), scalability (500W to 100's of kW), and LILT & HIHT operation capability (LILT – Low Intensity Low Temperature, HIHT – High Intensity High Temperature).

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Deployable Space Systems, Inc(DSS)	Lead Organization	Industry	Goleta, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140687)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Deployable Space Systems, Inc (DSS)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

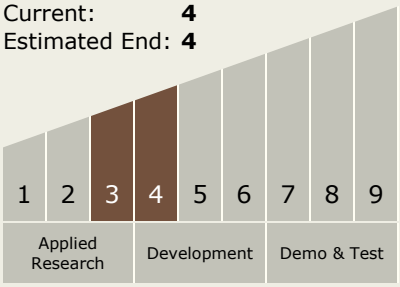
Carlos Torrez

Principal Investigator:

Brian R Spence

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.1 Photovoltaic

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System